REMARKS

This Reply and Amendment is intended to be completely responsive to the non-final Office Action dated August 14, 2001.

In the Claims

Claims 17-39 stand rejected.[1] On entry of this Reply and Amendment, dependent Claim 31 will be cancelled without prejudice, new dependent Claims 40-51 will be added to present claims of varying scope, and Claims 17-18, 28 and 33 will be amended for clarity. Accordingly, Claims 1 and 17-30 and 32-51 will be pending in this Application.

Exemplary support for the claim amendments is provided in the Specification at page 7, lines 18-20 ("Such temperature and pressure is intended to reduce the microporosity (microshrinkage defects) and densify the body by collapsing intergranular voids."), page 8, lines 1-3 ("substantially free of pores having a largest dimension which exceeds 0.0001 inch"), and page 8, lines 20-21 ("This material has a uniform and generally round grain structure"). No new matter has been added.

The claim amendments and status of the claims are shown in Exhibit A "marked up" relative to the previous version of the claims. 37 C.F.R. § 1.121.

Claim Rejections - 35 U.S.C. § 112 ¶ 2

In Section 2 of the Office Action, Claim 28 was rejected under 35 U.S.C. 112 ¶ 2 as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. The Examiner stated:

> Claim 28, which is drawn to an A1-Mg-Si 6000 series composition, is dependent on claim 26, which is drawn to "a 8090 aluminum alloy". Claim 28 fails to further limit claim 26. Appropriate correction is required.

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[1] Independent Claim 1 and dependent Claim 26 were originally presented when the Application was filed. In the Office Action, the Examiner did not reject Claim 1, or provide a basis for rejection of Claim 26. Accordingly, the Applicants request allowance of Claims 1 and 26.

Dependent Claim 28 has been amended to depend from Claim 27 as prescribed by the Examiner. Accordingly, the rejection to Claim 28 under 35 U.S.C. 112 ¶ 2 has been overcome.

Claim Rejections - 35 U.S.C. § 102(e)

In Section 4 of the Office Action, Claims 33-38 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,248,189 ("Shaffer et al."). The Examiner stated:

> [Shaffer et al.] teaches a 6000 series (Table 1) cast (column 5 lines 10-11) aluminum alloy exhibiting: elongation = 11%, UTS = 59.3 ksi, YS = 53.7 ksi (Table 3, example 3B).

Shaffer et al. does not identically disclose the combination of elements recited in independent Claim 33 (as amended). Shaffer et al. relates to an "aluminum alloy useful for driveshaft assemblies and method of manufacturing extruded tube of such alloy." The alloys of Table 3 of Shaffer et al. were "hot extruded by die and mandrel method" (col. 5, lines 10-12), i.e. not simply cast but "hot worked" to achieve shape. An elongated grain structure associated with such extruded material would be expected. Claim 33 (as amended) recites a combination including, among other elements, a "cast aluminum alloy article formed from a 6000 series aluminum alloy and having an elongation of at least about 4% and a tensile strength of at least about 38 KSI, wherein the aluminum alloy has a generally round grain structure," which is not identically disclosed in Shaffer et al. Accordingly, independent Claim 33 (and corresponding dependent Claims 34-38) are not anticipated by Shaffer et al. under 35 U.S.C. § 102(e) and are patentable.

Claim Rejections - 35 U.S.C. § 103(a)

In Section 6 of the Office Action, Claims 17-18, 20-21, 25 and 30-32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,791,876 ("Kroger"), a single reference. In Section 7 of the Office Action, Claims 17-18, 21 and 31-32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,520,754 ("Yaney"), a single reference. In Section 8 of the Office Action, Claims 17-21, 23-24, 27-28 and 32 were rejected under 35 U.S.C.

§ 103(a) as being unpatentable over U.S. Patent No. 6,120,625 ("Zhou et al"), a single reference. In Section 9 of the Office Action, Claims 17-18, 20-22, 29 and 31-32 and 32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,032,359 ("Pickens et al."), a single reference.

The Examiner acknowledged that neither Kroger, Yaney et al., Zhou et al. nor Pickens et al. "teach (a) a process of producing said aluminum alloy by centrifugally casting and then hot isostatically processing (instant independent claim 17)." However, the Examiner stated that "it is well settled that a product-by-process claim defines a product, and that when the prior art discloses a product substantially the same as that being claimed, differing only in the manner by which it is made, the burden falls to applicant to show that any process steps associated therewith result in a product materially different from that disclosed in the prior art." The Examiner concluded that Kroger, Yaney et al., Zhou et al. and/or Pickens et al. each (individually) teach an "aluminum alloy product substantially the same as the presently claimed product," and have "created a prima facie case of obviousness of the presented claimed invention."

Claims 17 and 18 are in independent form. Dependent Claim 31 has been cancelled. Dependent Claims 19-25, 27-30 and 32 depend from independent Claim 18. Claims 17 and 18 (as amended) recite a combination including, among other elements, a "high strength cast aluminum alloy product" (Claim 17) and an "article formed from an aluminum alloy" (Claim 18) having "a generally round grain structure" and being "substantially free of microshrinkage defects" wherein the alloy has an "elongation of at least about 4%." The subject matter recited in dependent Claims 19-25 and 27-30 and 32 would not have been obvious over Kroger, Yaney et al., Zhou et al. and/or Pickens et al. under 35 U.S.C. § 103(a).

Kroger shows a "high strength aluminum alloy" that is purported to be "substantially free from porosity as revealed by a dye-penetrant examination" (col. 1 lines 65-68), which appears to result from "an extensive working operation" such as extrusion, forging or rolling. (See col. 2, line 65 to col. 3, line 5: "Regardless of the particular working operation employed to produce the forging stock it is important that the working be rather extensive or severe"; see also col. 5, lines 65-68: "Forgings

produced in accordance with the improved method exhibit marked strength improvements over ordinary 7075 Forgings."). An elongated grain structure associated with such worked material would be expected.

Yaney et al. relates to a "spray cast Al-Li alloy composition and method of processing." Table 2 of Yaney et al. shows an Al-Li alloy composition that has undergone "metal working steps" including "forging" and "rolling" (col. 8 lines 20-35). An elongated grain structure associated with such worked material would be expected.

Zhou et al. relates to a "processes for producing fine grained metal compositions using continuous extrusion for semi-solid forming of shaped articles." Zhou et al. shows an extrudate that that emerges from an extrusion die, which is then "heated to a temperature between the solidus and liquidus temperatures of the metal to provide a microstructure which consists of discrete spheroidal particles" suspended in a "lower melting liquid matrix" and "converted into a semi-solid structure" (col. 3 lines 23-29, emphasis added). Figure 3B of Zhou et al. shows the microstructure of a continuously extruded alloy after being heated to a semi-solid temperature. The "discrete spheroidal particles" of Figure 3B appear to be separated by the lower melting matrix.

Pickens et al. shows an aluminum-lithium alloy that was "cast, homogenized, extruded, solutionized, quenched, and stretched (col. 5, lines 45-49, emphasis added, and Table III). An elongated grain structure associated with such extruded material would be expected.

However, Kroger, Yaney et al., Zhou et al. or Pickens et al. would not result in the subject matter recited in independent Claims 17 and 18, or corresponding dependent Claims 19-25 and 27-32. Kroger, Yaney et al., Zhou et al. and Pickens et al., alone or in any proper combination, do not disclose, teach or suggest the "high strength cast aluminum alloy product" and "article formed from an aluminum alloy" as recited in Claims 17 and 18. Moreover, the suggestion to make the modification of Kroger, Yaney et al., Zhou et al. and Pickens et al. has been taken from the Applicants' own specification (using hindsight), which is improper. Furthermore, to transform Kroger, Yaney et al., Zhou et al. or Pickens et al. to the "high strength cast aluminum

alloy product" and "article formed from an aluminum alloy" as recited in Claims 17 and 18 would require still further modification (e.g. an aluminum alloy having a "generally round grain structure" being "substantially free of microshrinkage defects" and having an "elongation of at least about 4%"), and such modification is taught only by the Applicants' own disclosure.

The subject matter recited in dependent Claims 19-25 and 27-30 and 32, considered as a whole, would not have been obvious to a person having ordinary skill in the art. The rejection of Claims 19-25 and 27-30 and 32 over Kroger, Yaney et al., Zhou et al. and Pickens et al., each applied by the Examiner as a single reference, under 35 U.S.C. § 103(a) is improper. Therefore, Claims 17-30 and 32 are patentable over Kroger, Yaney et al., Zhou et al. and Pickens et al.

In Section 10 of the Office Action, Claim 39 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Schaffer et al., a single reference. Claim 39 depends from independent Claim 33. For the reasons stated above with respect to Claim 33, the subject matter recited in Claim 39, considered as a whole, would not have been obvious to a person having ordinary skill in the art. The rejection of Claim 39 over Schaffer et al. under 35 U.S.C. § 103(a) is improper. Therefore, Claim 39 is patentable over Kroger.

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It is submitted that each outstanding objection and rejection to the Application has been overcome, and the Application is in a condition for allowance. On entry of this Reply and Amendment, Claims 1 and 17-30 and 32-51 will be pending in this Application. The Applicants respectfully request reconsideration and allowance of all pending Claims 1 and 17-30 and 32-51.

The Examiner is invited to telephone the undersigned if such would advance the prosecution of the Application.

Respectfully submitted,

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